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10/805,239	03/22/2004	Takahiro Ikeno	119196	9037

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OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

EXAMINER	
STOREY, WILLIAM C	

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2625	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/805,239	IKENO ET AL.	
	Examiner	Art Unit	
	WILLIAM C. STOREY	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30,32 and 33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30,32 and 33* is/are rejected.

7)☐ Claim(s) *7 and 22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 March 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Note

"While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also In re Swinehart, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971); In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "[A]pparatus claims cover what a device is, not what a device does." Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original)."-MPEP 2114-R1. Therefore, any structurally-equivalent system *capable* of performing the functionality described in a claim would anticipate the claim.

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the accompanying image resolution signal indicative of the image resolution value set by said image resolution setting portion as claimed in claim 7, 22 (and similarly-limited claims) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 7 & 22 (and dependents and similarly-limited claims) are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Please provide enabling

support for the claimed limitations. Though it may be mentioned in the instant specification that a resolution value follows, please provide enabling support for the generation, process of sending out, etc. with regard to the claimed limitations.

4. Claim 16 (and dependents) is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains material which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s) had possession of the claimed invention at the time the invention was filed. A patent must describe the technology that is sought to be patented; the requirement serves both to satisfy the inventor's obligation to disclose the technologic knowledge upon which the patent is based, and to demonstrate that the patentee was in possession of the invention that is claimed to put the public in possession of what the applicant claims as the invention. Further, the written description requirement promotes the progress of the useful arts by ensuring that patentees adequately describe their inventions in their patent specifications in exchange for the right to exclude others from practicing the invention for the duration of the patent's term. The claim states that one of said resolution-setting-timing-signal generating portion and said first and second resolution-setting-signal generating portions are controlled to generate said start signal again. Claim 12 defines the three mentioned and separate portions individually generated their respectively-named signals. Claim 13 defines that the signals are selected from a group consisting of a control signal, start signal, and clock pulse signal (see claim 13.) Claim 16 further limits the resolution-setting-timing-signal generating portion to not generating one of any

of the signals but the start signal as the resolution setting timing signal. Thus, since the resolution-setting-timing-signal generating portion has been defined as generating one of said control signal and said clock pulse signal and the other portions must generate their respective signal, it is unclear how the resolution-setting-timing-signal generating portion may generate said start signal ***again***. This portion is included in such possibility of operation as claimed since "one of" is claimed (see claim 16, considering the previous discussion.) In the context of this discussion and the claims, please provide written description support for such a scenario.

5. Claim 21 (and dependents) is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains material which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s) had possession of the claimed invention at the time the invention was filed. A patent must describe the technology that is sought to be patented; the requirement serves both to satisfy the inventor's obligation to disclose the technologic knowledge upon which the patent is based, and to demonstrate that the patentee was in possession of the invention that is claimed to put the public in possession of what the applicant claims as the invention. Further, the written description requirement promotes the progress of the useful arts by ensuring that patentees adequately describe their inventions in their patent specifications in exchange for the right to exclude others from practicing the invention for the duration of the patent's term. The specification describes how the speed of movement is increased with an increase in the number of the adjacent channel selector

switches ***to be simultaneously turned on*** (¶24. (Though ¶23 says "increase in the number of the plurality of adjacent switches," it is clear from the written description that the possessed invention pertains to the plurality of adjacent switches that are simultaneously turned on.)) This essential limitation has been left out and changes the meaning of the claims away from the written description. To increase the speed when the number of a plurality of adjacent switches is increased (this could be the total number of switches for the whole sensor, for example. Further, this would not really make logical sense to speed up in this scenario.) does not solidify the same meaning. The examiner will interpret the limitation in claim 21 as pertaining to said plurality of adjacent switches that are simultaneously turned on at a time.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 1 (and dependents and similarly-limited claims) is rejected. Claim 1 recites the limitation "said first resolution setting signal." No first resolution setting signal has been previously defined. There is insufficient antecedent basis for this limitation in the claim.

8. Claim 9, 10, 12 (and dependents and similarly-limited claims) are rejected. Claim 9 recites the limitation "said second and third input terminals". No third input terminal has been previously defined in the dependency structure associated with the claim. There is insufficient antecedent basis for this limitation in the claim. (Other claims provoke a similar issue.)

9. Claims 9, 10, 12 (and dependents and similarly-limited claims) are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim refers to said first resolution setting signal and said second resolution setting signal through said second and third input terminals, respectively. However, claim 1 defined the said second resolution setting signal going through said second input terminal, not third input terminal, to which claim 9 refers. (The other mentioned claims provoke a similar issue.)

10. Claim 10 (and dependents) is rejected. Claim 10 recites the limitation "said shift register." There is insufficient antecedent basis for this limitation in the claim.

11. Claim 16 (and dependents) is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim states that one of said resolution-setting-timing-signal generating portion and said first and second resolution-setting-signal generating portions are controlled to generate said start signal again. Claim 12 defines the three mentioned and separate portions individually generated their respectively-named signals. Claim 13 defines that the signals are selected from a group consisting of a control signal, start signal, and clock pulse signal (see claim 13.) Claim 16 further limits the resolution-setting-timing-signal generating portion to not generating one of any of the signals but the start signal as the resolution setting timing signal. Thus, since the resolution-setting-timing-signal generating portion has been defined as generating one of said control signal and said clock pulse signal and the

other portions must generate their respective signal, it is unclear how the resolution-setting-timing-signal generating portion may generate said start signal ***again***. This portion is included in such possibility of operation as claimed since "one of" is claimed (see claim 16, considering the previous discussion.)

12. Claim 24 (and dependent and similarly-limited claims) is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Said first and second resolution-setting-signal generating portion is referred to; however, no single first and second resolution-setting-signal generating portion has been defined.

13. Claim 25 (and dependents) is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 25 recites the limitation "said first and second resolution-setting-timing-signal generating portions." There is insufficient antecedent basis for this limitation in the claim. Only on resolution-setting-timing-signal has been previously defined. Nevertheless, the examiner assumes the applicant intended to claim "said first and second resolution-setting-signal generating portions."

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kozuka (JP 2000-101803).

Regarding claim 29, Kozuka discloses

a plurality of photoelectric converter elements each of which converts an optical signal into an electric signal (abstract, light receiving elements, read a signal voltage, photoelectric conversion converts an optical signal into an electric signal);

a signal generating portion that generates a start signal and a clock pulse signal (abstract, the start and clock signal are described as coming from externally. Inherently, there must be a signal generating portion in order for these signals to exist.);

Although Kozuka may not have distinctly described a plurality of channel selector switches which correspond to said photoelectric converter elements and which are selectively turned on and off to selectively connect and disconnect output portions of the corresponding photoelectric converter elements to and from a common signal line, in synchronization with said clock pulse signal particular to his or her invention of focus, Kozuka specified the conventional setup for the shift-register image sensor. From fig. 7 and ¶4, Kozuka discloses how one-by-one channel select switches for photo cells are selectively turned on (and off (by nature of being one-by-one at least)) to output the signal to the signal line (common signal line). From the description and the drawing, the operation is disclosed in synchronization with a clock pulse signal. Additionally, Kozuka discloses at fig. 1, abstract, ¶21, ¶23, ¶24, ¶33 that an array of light receiving elements is accessed and output serially by time through use of a shift register synchronized to a

clock pulse signal. It would have been at least obvious to one of ordinary skill in the art considering the conventional knowledge to utilize a plurality of channel selector switches in the manner claimed order to provide greater control, quality, flexibility, and/or ease through following convention in that particular manner.);

a shift register circuit that selectively turns on and off said plurality of channel selector switches, said shift register circuit being started by said start signal (the shift register circuit was discussed in the previous disclosures and discussion. Fig. 1, ¶4, 13, 14, 21, disclose starting the shift register circuit by a start signal. ¶4 discloses how the conventional sensor device is started by a start pulse. Considering this and that the pulse signal is called "start," it would have been at least obvious to one of ordinary skill in the art at the time the invention was made to provide having the start pulse signal start the shift register in order to exert greater control, to provide greater sense through following functionality according to the title of the signal, and/or to gain greater ease through following the known convention.); and

a resolution setting portion that receives said start signal and said clock pulse signal (fig. 1, resolution control signal generating means, ¶13), and to select one of a plurality of on-off control patterns of said plurality of channel selector switches, on the basis of on-off states of said start signal and said clock pulse signal (fig. 1-5, ¶22, 23, 26, 30, 32, 33 disclose how a control signal is set based on the on-off states of said start signal and said clock signal and from that control setting of high or low resolution, the on-off patterns of the scanning lines of the light receiving array is altered. For example, two adjacent lines may be read as one set for low res. or one-by-one may be read for high

res.) said plurality of channel selector switches being selectively turned on and off in the selected on-off control pattern, to set an image resolution value of the image sensor (from previous discussions),

said resolution setting portion including one of (a) a first portion for changing a moment at which the on-off states of the said start signal and said clock pulse signal are detected to select one of the plurality of on-off control patterns of the plurality of channel selector switches, and (b) a second portion for changing the on-off states of the said start signal and said clock pulse signal at a predetermined moment of detection of the on-off states of the start signal and the clock pulse signal (At least (a) is provided for in that, based on the set start pulse width, the moment of pt. A (at which the detection occurs) changes. (fig. 3, ¶22, 26, 32)).

16. Claims 1, 12, 25-28, & 30 & 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe (JP 2002185698).

Regarding claim 25 (and 1 and 12), Abe discloses an image sensor comprising:

a plurality of photoelectric converter elements each of which converts an optical signal into an electric signal (drawing 1, transducers (¶9));

a plurality of channel selector switches which correspond to said photoelectric converter elements and which are selectively turned on and off to selectively connect and disconnect output portions of the corresponding photoelectric converter elements to and from a common signal line, in synchronization with a clock pulse signal (¶9 discloses synchronizing with a clock; drawing 1 and ¶9, 12, 13 provide for a plurality of channel

selector switches (shift register corresponds to analog switches); drawing 1 provides a common signal line);

a first input terminal through which a resolution setting timing signal is received from an external device outside of the image sensor (previous, ¶17, 25, fig. 1, fig. 2, it is described how a clock signal is input in an input terminal. Inherently, the clock signal must come from an external device in order for it to exist.)

a second input terminal through which a second resolution setting signal is received from said external device (Fig. 1 and/or Fig. 2 disclose second and third input terminals from an external device (inherent for the signals to exist). A0 and A1 may read upon first and second resolution setting signals.); and

a resolution setting portion that receives said resolution setting timing signal (it was previously disclosed how the clock signal is input by way of an input terminal. From this, the clock signal may be said to be received.), said first resolution setting signal and a second resolution setting signal (drawing 1-2, ¶14, 12 disclose two bits A0 and A1 able to select a particular resolution),

and selects one of a plurality of on-off control patterns of said plurality of channel selector switches, on the basis of on-off states of the first and second resolution setting signals upon at least one of rising and falling of said resolution setting timing signal, said plurality of channel selector switches being selectively turned on and off in the selected on-off control pattern, to set an image resolution value of the image sensor (the previous disclosures provided for the combinations of bits to select different resolutions which affect the different switches being turned on or off. Drawing 3 gives an example.

¶17, 25, fig. 4, for example, show the resolution changed based on synchronization with the clock signal. This provides for upon at least one of rising and falling of said resolution timing signal.),

Regarding the limitations from claim 12, It has been discussed how the signals are generated and received. Inherently there must be a control portion that controls the portions of generation in order for the signals to exist, command generation, and/or or change of the signal, which has been shown/discussed.

Abe discloses wherein said first and second resolution-setting-timing-signal generating portions change a moment of at least one of rising and falling of each of said first and second resolution setting signals, depending upon said image resolution value to be set by said resolution setting portion, while said resolution-setting-timing-signal generating portion generates said resolution setting timing signal such that a pulse of said resolution setting timing signal rises and falls at respective predetermined fixed moments (it has been disclosed that the 2 bits for resolution setting are changed to create a different resolution setting. It has also been disclosed how the transducer outputs are selected in synchronization with a clock. Fig. 1 and/or Fig. 2 disclose second and third input terminals from an external device (inherent for the signals to exist). Further, drawing 4, ¶17, ¶19 disclose the resolution setting operating in synchronization with a clock. Thus, inherently, the on-off states (thus, changing the moment of at least one of rising and falling) of the 2 bits are set to set the resolution in synchronization with the clock (thus, the setting occurring at the predetermined moment

of detection of the setting signals. The clock is set to rise and fall at a predetermined constant frequency.).),

Regarding claim 26, the claim inherits everything as applied above for claim 25. It was previously discussed how the first and second resolution setting signals may be changed (thus, changing the moment of rising and falling for the signals). It was also discussed how the clock signal rises and falls at constant predetermined moments and synchronizes the changing of the logic of the first and second resolution setting signals; thus, the changing of the moment of falling of the first and second resolution setting signals may be said to be relative to the moment of falling of the resolution setting timing signal.

Regarding claim 27, the claim inherits everything as applied above for claim 25. It was previously discussed how the first and second resolution setting signals may be changed (thus, changing the moment of rising and falling for the signals). It was also discussed how the clock signal rises and falls at constant predetermined moments and synchronizes the changing of the logic of the first and second resolution setting signals; thus, the changing of the moment of rising and falling of the first and second resolution setting signals may be said to be relative to the moment of rising and falling of the resolution setting timing signal.

Regarding claim 28, the claim inherits everything as applied above for claim 25. It was previously discussed how the first and second resolution setting signals may be changed (thus, changing the moment of rising and falling for the signals). It was also discussed how the clock signal rises and falls at constant predetermined moments and

synchronizes the changing of the logic of the first and second resolution setting signals; thus, the changing of the moment of rising and falling of the first and second resolution setting signals may be said to be relative to the moment of rising and falling of the resolution setting timing signal. The same resolution may be used for a period of time and then selectively changed, such as with respect to areas on an original provoking different sensor resolution (¶17). The system is capable of having a scenario where two successive clock signal pulses pass and then the resolution setting signals are changed (see the note at the top of the office action) (fig. 4 provides further support (for example, A1 is changed after two successive clock pulses)).

Regarding claim 30, Abe discloses

a method of setting an image resolution of an image sensor comprising a plurality of photoelectric converter elements each of which converts an optical signal into an electric signal (drawing 1, transducers (¶9)), and a plurality of channel selector switches which correspond to said photoelectric converter elements and which are selectively turned on and off to selectively connect and disconnect output portions of the corresponding photoelectric converter elements to and from a common signal line, in synchronization with a clock pulse signal (¶9 discloses synchronizing with a clock; drawing 1 and ¶9, 12, 13 provide for a plurality of channel selector switches (shift register corresponds to analog switches); drawing 1 provides a common signal line), and a shift register circuit that selectively turns on and off said plurality of channel selector switches (¶9), said method comprising the steps of:

generating a resolution setting timing signal, a first resolution setting signal and a

second resolution setting signal, which are received by the image sensor through first, second and third input terminals, respectively, from an external device outside of the image sensor (previous, ¶17, 25, fig. 1, fig. 2, it is described how a clock signal is input in an input terminal. Inherently, the clock signal must come from an external device in order for it to exist. Fig. 1 and/or Fig. 2 disclose input terminals from an external device (inherent for the signals to exist). ¶10 discloses how the resolution switching signal may be composed of multiple bits. It is disclosed how 13 represents a resolution switching terminal in which a multiple-bit resolution switching signal is input (¶12). Therefore, 13 may read on claimed third input terminal. Further, ¶5 describes how image sensors of this fashion work. ¶5 discloses that when the start signal is inputted in the SI terminal), based on the logic of resolution switching terminal 13, the resolution is changed. Thus the start and resolution switching signals may read upon claimed first and second resolution setting signals. Considering that discussion and fig. 1, an SI input terminal, such as SI0, may read upon claimed second input terminal. Again, as these signals are shown coming into the device, inherently, they must be generated from an external device outside of the image sensor.); and

selecting one of a plurality of on-off control patterns of said plurality of channel selector switches, on the basis of on-off states of the first and second resolution setting signals upon at least one of rising and falling of said resolution setting timing signal,

said plurality of channel selector switches being selectively turned on and off in the selected on-off control pattern, to set an image resolution value of the image sensor (previous, drawing 1-2, ¶14, 12 disclose two bits A0 and A1 of the resolution switching

signal affecting selection of a particular resolution which affect the different switches being turned on or off. Drawing 3 gives an example. ¶17, 25, fig. 4, for example, show the resolution changed based on synchronization with the clock signal. This provides for upon at least one of rising and falling of said resolution timing signal. It was previously discussed how the image sensor conventionally utilizes a start signal in order to start operation. From the previously-mentioned disclosure in ¶5 and fig. 1 that shows the start signal affecting an enabling input, it would have been at least obvious to one of ordinary skill in the art at the time the invention was made to conduct the operations according to the start signal at least for the purpose of providing greater control. Thus, the basis of the on-off states of the start signal and the resolution switching signal would have to be taken into account.),

wherein said resolution setting timing signal and said first and second resolution setting signals are selected from a group consisting of a control signal for setting said image resolution value, a start signal for starting said shift register circuit, and said clock pulse signal (it has been discussed how the second resolution setting signal may be the resolution switching signal (control signal for setting said image resolution value), the first resolution setting signal may be the start signal (start signal for starting said shift register), and the resolution setting timing signal may be the clock signal (clock pulse signal).).

Regarding claim 32, the claim inherits everything as applied above for claim 30. Abe disclosed in fig. 2 a plurality of on-off control patterns of said plurality of channel

selector switches equal to a multiple of four. The on-off patterns correspond to different values of the image resolution of the image sensor (additionally, ¶14).

17. Claims 1, 9, 10-11, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe (JP 2002185698) in view of Kozuka (US 6473538); hereinafter referred to as Kozuka2.

Regarding claim 10 (and 1), Abe discloses an image sensor comprising:

a plurality of photoelectric converter elements each of which converts an optical signal into an electric signal (drawing 1, transducers (¶9));

a plurality of channel selector switches which correspond to said photoelectric converter elements and which are selectively turned on and off to selectively connect and disconnect output portions of the corresponding photoelectric converter elements to and from a common signal line, in synchronization with a clock pulse signal (¶9 discloses synchronizing with a clock; drawing 1 and ¶9, 12, 13 provide for a plurality of channel selector switches (shift register corresponds to analog switches); drawing 1 provides a common signal line);

a first input terminal through which a resolution setting timing signal is received from an external device outside of the image sensor (previous, ¶17, 25, fig. 1, fig. 2, it is described how a clock signal is input in an input terminal. Inherently, the clock signal must come from an external device in order for it to exist.)

a second input terminal through which a second resolution setting signal is received from said external device (Fig. 1 and/or Fig. 2 disclose second and third input terminals

from an external device (inherent for the signals to exist). A0 and A1 may read upon first and second resolution setting signals.); and

a resolution setting portion that receives said resolution setting timing signal (it was previously disclosed how the clock signal is input by way of an input terminal. From this, the clock signal may be said to be received.), said first resolution setting signal and a second resolution setting signal (drawing 1-2, ¶14, 12 disclose two bits A0 and A1 able to select a particular resolution),

and selects one of a plurality of on-off control patterns of said plurality of channel selector switches, on the basis of on-off states of the first and second resolution setting signals upon at least one of rising and falling of said resolution setting timing signal, said plurality of channel selector switches being selectively turned on and off in the selected on-off control pattern, to set an image resolution value of the image sensor (the previous disclosures provided for the combinations of bits to select different resolutions which affect the different switches being turned on or off. Drawing 3 gives an example. ¶17, 25, fig. 4, for example, show the resolution changed based on synchronization with the clock signal. This provides for upon at least one of rising and falling of said resolution timing signal.),

said resolution setting portion including one of (a) a first portion for changing a moment at which the on-off states of the first and second resolution setting signals respectively received through second and third input terminals from said external device are detected to select one of the plurality of on-off control patterns of the plurality of channel selector switches, and (b) a second portion for changing the on-off states of the first and

second resolution setting signals at a predetermined moment of detection of the on-off states of first and second resolution setting signals (it has been disclosed that the 2 bits for resolution setting are changed to create a different resolution setting. It has also been disclosed how the transducer outputs are selected in synchronization with a clock. Fig. 1 and/or Fig. 2 disclose second and third input terminals from an external device (inherent for the signals to exist). Further, drawing 4, ¶17, ¶19 disclose the resolution setting operating in synchronization with a clock. Thus, inherently, the on-off states of the 2 bits are set to set the resolution in synchronization with the clock (thus, the setting occurring at the moment of detection of the setting signals).),

Regarding the limitation wherein a shift register circuit simultaneously turns on a plurality of adjacent switches of said plurality of channel selector switches, when said image resolution value set by said resolution setting portion is other than a highest one of a plurality of image resolution values available by an operation of said resolution setting portion, Abe discloses being able to selectively set resolution for portions of the image and to set different resolutions at clock sequences (¶16-19). The examiner maintains that the limitation was well known in the art as taught by Kozuka2.

In a similar field of endeavor, Kozuka2 discloses an image sensor that may vary resolution. Kozuka2 discloses being able to differ the resolution between at least a high mode and a low mode. In the high mode, the light receiving elements may be output sequentially (not simultaneously as a plurality of adjacent switches) or output in simultaneously output pairs for a low mode (col. 6, lines 49-51, col. 7, lines 31-57, fig. 4-6). Col. 7, lines 28-30, fig. 5, fig. 6 describes how this is the operation of a shift register

unit. Col. 7, lines 17-27, col. 6, lines 28-31, further illuminate the fact that the number of said adjacent switches varying depending upon the image resolution value set by said resolution setting portion is provided for.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide wherein a shift register circuit simultaneously turns on a plurality of adjacent switches of said plurality of channel selector switches, when said image resolution value set by said resolution setting portion is other than a highest one of a plurality of image resolution values available by an operation of said resolution setting portion for the purpose of allowing for greater flexibility and/or greater image accuracy and/or quality.

Regarding claim 11, the claim inherits everything as applied above for claim 10. It has been disclosed how Abe may selectively switch resolution for different portions of an input image and doing it in synchronization with a clock (¶16-18 and above). Kozuka2, Fig. 4, fig. 7, col. 3, lines 1-7, col. 6, lines 54-60 further describes how the switches are activated in synchronization with the clock pulse signal. It would have been at least obvious to utilize the synchronized separate Φ drive pulses for at least the purpose of greater flexibility and/or control and the reasons mentioned previously for use of Kozuka2 in claim 10. It has been described how the operation is synchronized with the clock, and how the simultaneous reading from adjacent switches occurs when the image resolution value set is other than the highest value (high level mode). Further, the previous disclosures have also described how the plurality of adjacent

switches that are activated for readout are simultaneously read, and then sequentially other successive groups are read (for example, col. 7, lines 18-22).

Regarding claim 33 (and 9), the claim is rejected based upon similar reasoning as applied above for claim 10. In addition, claim 9 (which 33 is dependent on) mentions the limitation of before said plurality of channel selector switches are selectively turned on to connect said output portions of the corresponding photoelectric converter elements to said common signal line. However, from drawing 1 of Abe, it is clear that the signals are received into the setting portion, as at least that whole picture may be taken to be the resolution setting portion, since the two signals have an approach before the switches are turned on.

18. Claims 1-2, 4-6, 8, 12-13, 17-21, & 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kozuka2 (US 6473538), hereinafter referred to as Kozuka2; and further in view of Abe (JP 2002185698).

Regarding claim 1, Kozuka2 discloses

a plurality of photoelectric converter elements each of which converts an optical signal into an electric signal (light receiving elements (col. 6, lines 32-38, col. 64-67));

a plurality of channel selector switches which correspond to said photoelectric converter elements and which are selectively turned on and off to selectively connect and disconnect output portions of the corresponding photoelectric converter elements to and from a common signal line, in synchronization with a clock pulse signal (fig. 4, 5, 6, col. 3, lines 1-4, col. 6, lines 61-67, col. 7, lines 12-67, col. 8, lines 1-6. It is disclosed how switches may be selectively turned on and off with respect to certain light receiving

elements that output to a common line in synchronization with a clock pulse signal.);
and a first input terminal through which a resolution setting timing signal is received from an external device outside of the image sensor (Fig. 4, clk, inherently must come from an external device in order to exist.);
a second input terminal through which a second resolution setting signal is received from said external device (Fig. 4, mode, inherently must come from an external device in order to exist.); and
a resolution setting portion that receives said resolution setting timing signal, a first resolution setting signal (fig. 4, col. 6, lines 24-25, sp may read on claimed first resolution setting signal) and said second resolution setting signal, and selects one of a plurality of on-off control patterns of said plurality of channel selector switches (fig. 7, col. 7, lines 17-27 disclose different on-off patterns that may be selected based on the resolution setting), said plurality of channel selector switches being selectively turned on and off in the selected on-off control pattern, to set an image resolution value of the image sensor (fig.7).

However, the previous disclosures may not have provided for the best example of selecting on the basis of on-off states of the first and second resolution setting signals upon at least one of rising and falling of said resolution setting timing signal. Therefore, for further support, reference to Abe will be made.

In a similar field of endeavor, Abe discloses and image sensor that may switch resolution. Further Abe discloses Fig. 1 and/or Fig. 2 disclose input terminals from an external device (inherent for the signals to exist). ¶10 discloses how the resolution

switching signal may be composed of multiple bits. It is disclosed how 13 represents a resolution switching terminal in which a multiple-bit resolution switching signal is input (¶12). Therefore, 13 may read on claimed third input terminal. Further, ¶5 describes how image sensors of this fashion work. ¶5 discloses that when the start signal is inputted in the SI terminal), based on the logic of resolution switching terminal 13, the resolution is changed. Thus the start and resolution switching signals may read upon claimed first and second resolution setting signals. Considering that discussion and fig. 1, an SI input terminal, such as SI0, may read upon claimed second input terminal. Again, as these signals are shown coming into the device, inherently, they must be generated from an external device outside of the image sensor. Additionally, drawing 1-2, ¶14, 12 disclose two bits A0 and A1 of the resolution switching signal affecting selection of a particular resolution which affect the different switches being turned on or off. Drawing 3 gives an example. ¶17, 25, fig. 4, for example, show the resolution changed based on synchronization with the clock signal. This provides for upon at least one of rising and falling of said resolution timing signal. It was previously discussed how the image sensor conventionally utilizes a start signal in order to start operation. From the previously-mentioned disclosure in ¶5 and fig. 1 that shows the start signal affecting an enabling input, it would have been at least obvious to one of ordinary skill in the art at the time the invention was made to conduct the operations according to the start signal at least for the purpose of providing greater control. Thus, the basis of the on-off states of the start signal and the resolution switching signal would have to be taken into account.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide selecting on the basis of on-off states of the first and second resolution setting signals upon at least one of rising and falling of said resolution setting timing signal for the purpose of at least providing greater control.

Regarding claim 2, the claim inherits everything as applied above for claim 1. Kozuka2 disclosed comprising a shift register circuit that selectively turns on and off said plurality of channel selector switches in the on-off control pattern selected by said resolution setting portion (previously disclosed), and wherein said resolution setting timing signal and said first and second resolution setting signals being are selected from a group consisting of a control signal for setting said image resolution value (mode), a start signal for starting said shift register circuit, and said clock pulse signal (previously disclosed).

Regarding claim 4, the claim inherits everything as applied above for claim 2. Kozuka2 discloses being able to differ the resolution between at least a high mode and a low mode. In the high mode, the light receiving elements may be output sequentially (not simultaneously as a plurality of adjacent switches) or output in simultaneously output pairs for a low mode (col. 6, lines 49-51, col. 7, lines 31-57, fig. 4-6). Col. 7, lines 28-30, fig. 5, fig. 6 describes how this is the operation of a shift register unit. Col. 7, lines 17-27, col. 6, lines 28-31, further illuminate the fact that the number of said adjacent switches varying depending upon the image resolution value set by said resolution setting portion is provided for.

Regarding claim 5, the claim inherits everything as applied above for claim 1. From the previous discussions and disclosures, it has been shown that the image resolution value must be set before each line of image is read by operation of said plurality of photoelectric converter elements and said plurality of channel selector switches.

Regarding claim 6, the claim inherits everything as applied above for claim 5. Considering that the resolution is set before each line is read, inherently, the resolution is also set before each page of image is read.

Regarding claim 8, the claim inherits everything as applied above for claim 1. Kozuka2 discloses at col. 8, lines 47-52 that a second mode setting bit may be applied that allows for more resolutions. Though 3 are depicted, it is mentioned that the number of resolutions is merely an example and can be arbitrarily set. Further, considering that Abe has disclosed a terminal for a multiple-bit resolution signal, it would have been at least obvious to provide for a plurality of on-off control patterns corresponding to resolutions at least in order to provide greater flexibility.

Regarding claim 12, the claim inherits everything as applied above for claim 1. It has been discussed how the signals are generated and received. Inherently there must be a control portion that controls the portions of generation in order for the signals to exist, command generation, and/or or change of the signal, which has been shown/discussed.

Regarding claim 13, the claim is rejected based upon similar reasoning as applied above for claim 2 and discussions provided above for claim 12.

Regarding claim 17, the claim inherits everything as applied above for claim 12. Regarding claim 17, the claim is rejected based upon similar reasoning as applied above for claim 5.

Regarding claim 18, the claim inherits everything as applied above for claim 12. Regarding claim 18, the claim is rejected based upon similar reasoning as applied above for claim 6.

Regarding claim 19, the claim inherits everything as applied above for claim 12. Regarding claim 19, the claim is rejected based upon similar reasoning as applied above for claim 4.

Regarding claim 20, the claim inherits everything as applied above for claim 19. Kozuka2 at Fig. 4, fig. 7, col. 3, lines 1-7, col. 6, lines 54-60 further describes how the switches are activated in synchronization with the clock pulse signal. It has been described how the operation is synchronized with the clock, and how the simultaneous reading from adjacent switches occurs when the image resolution value set is other than the highest value (high level mode). Further, the previous disclosures have also described how the plurality of adjacent switches that are activated for readout are simultaneously read, and then sequentially other successive groups are read (for example, col. 7, lines 18-22).

Regarding claim 21, the claim inherits everything as applied above for claim 20. Kozuka discloses the read speed increasing for low resolution vs. high resolution (fig. 7, col. 8, lines 4-6). Col. 7, lines 17-27 disclose that in the low resolution mode, an increase in adjacent and simultaneously enabled pixels occurs (increase in the number

of said plurality of adjacent switches that are simultaneously turned at a time). Read speed allows for faster reading of the document, and in a document feeding scanner, it would have been obvious to have the document fed and scanned faster to accommodate the increased reading speed. Col. 10, lines 38-47, fig. 11 disclose moving the original and the scanning unit (row of said photoelectric converter elements) relative to each other in a direction perpendicular to a direction of extension of said row. In addition, it has been detailed how different resolutions may be set. Considering this, reading speed may accordingly be adjusted by an increase in simultaneous enablement as shown in the example of fig. 7, or by the fact that a lower resolution provides a smaller representative output number of pixels than the higher and thus, would be able to accomplish a read inherently faster. This adjustment would provide increased flexibility and capability.

Regarding claim 23, the claim inherits everything as applied above for claim 12. Regarding claim 23, the claim is rejected based upon similar reasoning as applied above for claim 8.

19. Claims 7 & 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the previous disclosures as applied above for claims 1 and/or 12 in view of well known prior art (MPEP 2144.03).

Regarding claims 7 & 22, the previous disclosures disclose everything claimed, as applied above, but did not distinctly disclose wherein the electric signals generated as image signals by the electric signals generated by said plurality of photoelectric converter elements are accompanied by an image resolution signal indicative of the

image resolution value set by said resolution setting portion. However, the examiner takes official notice of the fact that it was well known in the art to provide wherein the electric signals generated as image signals by the electric signals generated by said plurality of photoelectric converter elements are accompanied by an image resolution signal indicative of the image resolution value set by said resolution setting portion (For example, image data with accompanying resolution information data.)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the previous disclosures by specifically providing wherein the electric signals generated as image signals by the electric signals generated by said plurality of photoelectric converter elements are accompanied by an image resolution signal indicative of the image resolution value set by said resolution setting portion, for at least the purpose of providing greater system awareness.

Response to Arguments

20. Applicant's arguments with respect to the claims have been considered but many are moot in view of the new ground(s) of rejection.

Regarding the discussion for claim rejections supported by Abe and Kozuka, the applicant merely makes a single sentence remark that "Abe, Kozuka and Moss do not remedy the above-described deficiencies of Saika." There is no rationale provided to support against this blanket statement. As such, the examiner merely refers the applicant to the discussions provided for the claims for support of the counterargument.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sakasai et al. (JP 06-303378) provides clock, start, and resolution control signal by three distinct input terminals to a resolution setting portion to choose different timing signals for different resolution.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM C. STOREY whose telephone number is (571)270-3576. The examiner can normally be reached on Monday - Friday Eastern Standard Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Y. Poon can be reached on (571) 272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/William C Storey/ William C Storey

Examiner, Art Unit 2625

Examiner
Art Unit 2625

/W. C. S./
Examiner, Art Unit 2625
/King Y. Poon/
Supervisory Patent Examiner, Art Unit 2625